

WHAT IS CLAIMED IS:

- 1    1.     A semiconductor structure comprising:  
2                a semiconductor core having a side surface;  
3                a layer of insulating material on said side surface; and  
4                electrically isolated electrodes arrayed along said layer of  
5    insulating material on said side surface, said electrically isolated electrodes  
6    including a conductive material having etch selectivity with respect to said  
7    insulating material.
- 1    2.     The semiconductor structure of claim 1 wherein said electrically isolated  
2    electrodes extend substantially in a direction orthogonal to a major surface of said  
3    semiconductor core, said major surface being orthogonal to said side surface.
- 1    3.     The semiconductor structure of claim 1 wherein said conductive material  
2    includes silicon-based conductive material.
- 1    4.     The semiconductor structure of claim 3 wherein said silicon-based  
2    conductive material includes polysilicon.
- 1    5.     The semiconductor structure of claim 1 wherein said semiconductor core  
2    includes single-crystal silicon.
- 1    6.     The semiconductor structure of claim 1 wherein said insulating material of  
2    said layer includes oxide of said semiconductor core.
- 1    7.     The semiconductor structure of claim 1 wherein said electrically isolated  
2    electrodes are additionally arrayed over a major surface of said semiconductor  
3    core, said major surface being orthogonal to said side surface.

1     8.     The semiconductor structure of claim 7 further comprising interconnects  
2     electrically connected to selected ones of said electrically isolated electrodes, said  
3     interconnects being positioned over said major surface of said semiconductor  
4     core.

1     9.     The semiconductor structure of claim 7 wherein said electrically isolated  
2     electrodes are additionally arrayed along a second side surface of said  
3     semiconductor core.

1     10.    A semiconductor structure comprising:  
2                    a semiconductor core having a major surface and a side surface,  
3     said major surface being orthogonal to said side surface;  
4                    a layer of insulating material on said side surface; and  
5                    electrically isolated electrodes arrayed along said layer of  
6     insulating material on said side surface such that said electrically isolated  
7     electrodes extend substantially in a direction orthogonal to said major surface, said  
8     electrically isolated electrodes including conductive material having etch  
9     selectivity with respect to said insulating material.

1     11.    The semiconductor structure of claim 10 wherein said conductive material  
2     includes silicon-based conductive material.

1     12.    The semiconductor structure of claim 11 wherein silicon-based conductive  
2     material includes doped polysilicon.

1     13.    The semiconductor structure of claim 10 wherein said semiconductor core  
2     includes single-crystal silicon.

1     14.    The semiconductor structure of claim 10 wherein said electrically isolated  
2     electrodes additionally extend over said major surface of said semiconductor core.

1 15. The semiconductor structure of claim 14 further comprising interconnects  
2 electrically connected to selected ones of said electrically isolated electrodes, said  
3 interconnects being positioned over said major surface of said semiconductor  
4 core.

1 16. A method for fabricating a semiconductor structure, the method  
2 comprising:  
3 providing a semiconductor core with a side surface;  
4 forming a layer of insulating material on said side surface of said  
5 semiconductor core;  
6 forming a layer of conductive material adjacent to said layer of  
7 insulating material on said side surface, said conductive material having etch  
8 selectively with respect to said insulating material; and  
9 selectively etching said layer of conductive material using a stop-  
10 on-oxide deep reactive ion etching to define electrically isolated electrodes  
11 arrayed along said layer of insulating material on said side surface.

1 17. The method of claim 16 wherein said selectively etching includes  
2 selectively etching said layer of conductive material using said stop-on-oxide deep  
3 reactive ion etching such that said electrical isolated electrodes extend  
4 substantially in a direction orthogonal to a major surface of said semiconductor  
5 core, said major surface being orthogonal to said side surface.

1 18. The method of claim 16 wherein said forming of said layer insulating  
2 material includes forming a layer of oxide on said side surface of said  
3 semiconductor core.

1 19. The method of claim 16 wherein said forming of said layer of conductive  
2 material includes forming a layer of silicon-based conductive material adjacent to  
3 said layer of insulating material.

1    20.    The method of claim 19 wherein said forming of said layer of silicon-  
2    based conductive material includes forming a layer of polysilicon adjacent to said  
3    layer of insulating material.

1    21.    The method of claim 16 wherein said providing of said semiconductor  
2    core includes providing a single-crystal silicon core with said side surface.

1    22.    The method of claim 16 wherein said forming of said layer of conductive  
2    material includes forming said layer of conductive material over a major surface  
3    of said semiconductor core, said major surface being orthogonal to said side  
4    surface, and wherein said selectively etching of said layer of conductive material  
5    includes selectively etching said layer of conductive material over said major  
6    surface of said semiconductor core using said stop-on-oxide deep reactive ion  
7    etching such that said electrically isolated electrodes extend over said major  
8    surface of said semiconductor core.

1    23.    The method of claim 22 further comprising forming interconnects over  
2    said major surface of said semiconductor core, said interconnects being  
3    electrically connected to selected ones of said electrically isolated electrodes.